

# Marine Ornamental Stock Assessment

Assessing Exploitable Stocks  
of Fish and Invertebrate Species  
for the Export Aquarium Trade

Steve LeGore  
[slegore@mindspring.com](mailto:slegore@mindspring.com)

# Today's Discussion Topics

- History and Circumstances of the Fishery
- Fresh Approach to Management
- Current Research Program



# History of the Fishery



- Has existed for decades – since early 60s
- Unregulated and unstudied
- Export and domestic components
- First described in 1991 (Sadovy)
  - 155 finfish species
  - 51 invertebrate species

# Regulatory Measures

- Attention drawn by new regulations
- Information gaps ➡ worst-case assumptions of impact
- Fishery ban caused fisher backlash
- Courtroom battles



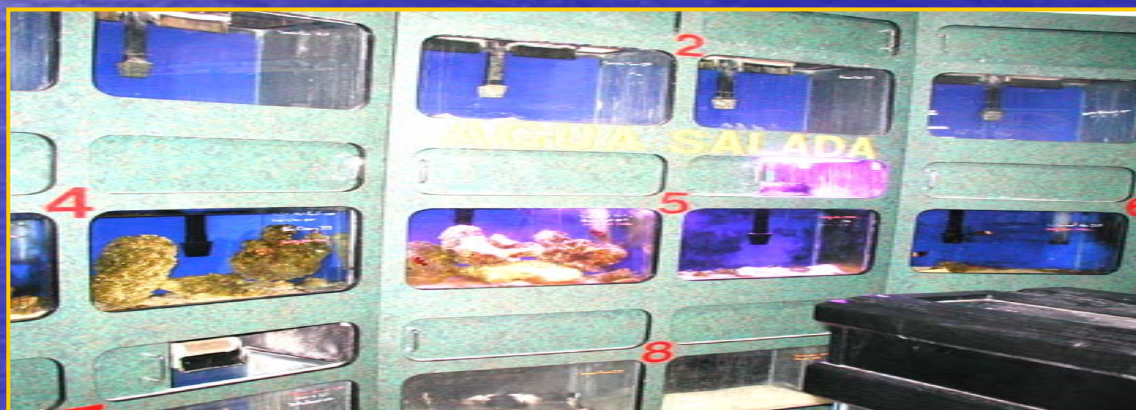
# Emergence of Two Primary Issues



- Resource management agencies lack information on this business and the resources supporting it
- Trust and communication between management agencies and fishers is at low state, requiring practical remedy to enable resource management

# Three-Phased Program

- Phase I – Fishery characterization
- Phase II – Wild stock assessment
- Phase III – Development of management policy options



# Phase I Characterization

- Fishery small, but growth potential large
- ~20 permitted export fishers
  - west & south of island
- Responsible methods fortunate for PR
  - no chemicals or explosives
  - non-destructive harvesting
- ~101 finfish species
- ~113 invertebrate species



# Phase II – Stock Assessment

- >200 species, but limited resources
- Numerous habitats
  - Mangrove
  - Coral reef and rubble
  - Seagrass and sand
  - Hard bottom
- Some cryptic, difficult habitats, unclear taxonomy



# Basic Approach



- Determine minimum numbers occurring in various habitat types
  - Why minimum? Well, because . . .
- Determine amount of each habitat type
  - NOAA habitat maps
- Extrapolate minimum populations

# Assessment Methods - Fish

- Fishery ~101 spp, but top 10 = ~80% of quantity captured
- Indicator list of 18 species
- 12 most common
- + 6 based on assumed vulnerability



# Fish Indicator List

- First 12: Royal Grama, Green Banded Goby, Blue Chromis, Bluehead Wrasse, Redlip Blenny, Blackbar Soldier, Blue Tang, Horned Blenny, Neon Wrasse, Rock Beauty, Pygmy Angelfish, Yellowhead Jawfish
- Next 6: French Angel, Gray Angel, Spanish Hogfish, Yellowtail Hamlet, Beaugregory, Sharpnose Puffer

# Survey Methods - Finfish

- Target Habitats: forereef and backreef zones, spur and groove, patch reefs
- Five 3 x 10 m belt transects per site/depth
  - Static observation
  - Initial counting transit
  - Second transit for cryptic species
- Representative depths
- Roving diver active search census



# Assessment Methods - Invertebrates



- ~113 spp, but top 10 = 65% of total #s
- Indicator list of 34 species
  - most common 50 species
  - minus 16 cryptic or difficult species

# Invertebrate Indicator List

- Blue-Legged Hermit Crab, Pink Tip Anemone, Turbo Snail, Serpent Star, Feather Duster, Rock Anemone, Curly Cue Anemone, Flame Scallop, Sea Mat, Sea Cucumber, Fiddler Crab, Emerald Crab, Red Thorn Starfish, Sunray Anemone, Pincushion Urchin, Carpet Anemone, Stinging Anemone, Star Snail, Blue Filter Starfish, Red Frilly Sponge, Bahamas Starfish, Sally Lite Foot Crab, Mushroom Polyps, Shaving Brush, Brittle Starfish, Harlequin Serpent Star, Challis Halimeda, Long Spine Urchin, Corky Sea Fingers, Pine Tree, Red Serpent Starfish, Fan Halimeda, Red Rock Urchin, Short Spine Urchin

# Survey Methods - Invertebrates

- Target Habitats: Mangrove root zones, seagrass-sand, "sea mat" (zooanthid) zones, reef crest and backreef rubble zones
- Three+ 2 x 30 m belt transects per site
- Three+ 1 m<sup>2</sup> quadrats
- Roving diver active search census
- Vertical habitat inventory
- Mangrove island census



# Schedule



- First survey late spring-early summer
- Second survey late summer-early fall
- Supplemental with participating fishers

**Questions?**